

## CLAIMS

- 5 1 An ignition system for a smoking machine, comprising a heat source that is adapted for emitting heat for igniting one end of a smoking article which is held by a smoking machine; an automatic sensor which is adapted for detecting the position of said end of the smoking article; and control means in communication with said sensor, which are adapted for
- 10 automatically adjusting the operation of said heat source and/or for automatically adjusting relative movement of said heat source and/or of said article, depending on the position of said end as detected by said sensor, such as to enable successful ignition of said end by said heat source.
- 15 2 An ignition system as claimed in claim 1, wherein said control means is adapted to automatically adjust relative movement of said heat source and/or said smoking article, such that a predetermined distance separates said heat source from said end of the smoking article, whereby said end of the smoking article can be successfully ignited by the heat source.
- 20
- 3 An ignition system as claimed in claim 2, wherein said heat source is capable of movement with respect to said smoking article, and said control means is adapted for controlling movement of said heat source, whereby the heat source under the control of said control means can be moved into or
- 25 halted at a selected position.
- 4 An ignition system as claimed in claim 2 or claim 3, wherein said control means is adapted for controlling movement of a smoking article held by a smoking machine, whereby said smoking article under the control of

said control means can be moved into or halted at a selected position.

5       An ignition system as claimed in any of claims 2-4, wherein said sensor is arranged to detect the end of a smoking article when said end is  
5 disposed at said predetermined distance from the heat source, or when said end is positioned such that after subsequent movement of said smoking article and/or said heat source along a pre-set locus, said end will be disposed at said predetermined distance from the heat source.

10 6       An ignition system as claimed in any of claims 2-4, which ignition system is arranged such that following detection of said end of the smoking article by said sensor, said heat source and/or said smoking article are moved under the control of the control means such as to achieve said predetermined distance between said heat source and said end of the  
15 smoking article.

7       An ignition system as claimed in any preceding claim, wherein said control means is adapted to automatically adjust the operation of said heat source following detection of the end of a smoking article by the sensor,  
20 such as to enable successful ignition of said end of the smoking article by the heat source.

8       An ignition system as claimed in claim 7, wherein said heat source is adapted for emitting heat by air convection for igniting said end of the  
25 smoking article, and said control means is adapted to automatically adjust the temperature of the heat source, the adjustment depending upon the location of said end, as detected by the sensor.

9       An ignition system as claimed in claim 7 or claim 8, wherein said

control means is adapted to adjust the channelling of heat from said heat source to said end of the smoking article, by selectively dispersing heat away from the end of the smoking article and/or selectively directing heat towards the smoking article, as required.

5

10 An ignition system as claimed in any of claims 7-9, wherein said heat source is adapted for emitting heat for igniting said end of the smoking article by electromagnetic radiation, and said control means is adapted for automatically adjusting the level and/or the wavelength range of

10 electromagnetic radiation that is applied by the heat source to the end of the smoking article for igniting the article, the adjustment depending upon the position of said end as detected by the sensor.

11 An ignition system as claimed in claim 10, wherein said control

15 means is adapted for automatically adjusting the level and/or the wavelength range of electromagnetic radiation that is emitted from the heat source.

12 An ignition system as claimed in claim 10 or claim 11, wherein said control means is adapted for adjusting the level and/or the wavelength range

20 of electromagnetic radiation that is transmitted from the heat source to the end of the smoking article.

13 An ignition system as claimed in claim 12, wherein said control

means is adapted for adjustably shielding and/or obscuring said heat source

25 from said end of the smoking article, and/or for selectively focusing radiation emitted by said heat source onto said end, and/or for selectively deflecting radiation emitted by said heat source away from said end.

14 An ignition system as claimed in claim 13, wherein said control

means includes adjustable shield means which can be positioned and adjusted in order to shield a selected area of the heat source from the end of the smoking article, and/or adjustable reflecting and/or refracting means which are adapted to selectively focus or direct radiation emitted from the heat source towards said end of the smoking article, and/or adjustable refracting and/or deflecting means which are adapted to selectively direct radiation emitted from the heat source away from the end of the smoking article.

10 15 An ignition system as claimed in claim 13 or claim 14, wherein said control means comprises at least one thermal filter, which thermal filter is adapted to absorb or reflect a proportion of radiation impinging on the filter, which thermal filter is arranged to be removably positioned between said heat source and the end of the smoking article such as to prevent the transmission of a proportion of radiation emitted from said heat source towards said smoking article.

16 An ignition system as claimed in claim 15, wherein said control means comprises one or more variable or dichroic filters, each variable or dichroic filter including a plurality of discrete areas with different absorption/reflection characteristics, such that by positioning the variable or dichroic filter between the heat source and the end of the smoking article and moving the variable or dichroic filter relative to the heat source and the smoking article, the quantity of electromagnetic radiation transmitted from the heat source to the smoking article may be adjusted as required.

17 An ignition system as claimed in any preceding claim, wherein said control means is adapted to automatically adjust the time for which heat is applied to the end of the smoking article for igniting the article, depending

upon the location of said end.

18 An ignition system as claimed in any preceding claim, wherein said control means is adapted to automatically adjust the timing of the application  
5 of heat with respect to the puff cycle of a smoking machine, depending upon the position of said end of the smoking article as detected by the sensor.

19 An ignition system as claimed in claim 2 or any claim dependent thereon, wherein said sensor is adapted for determining when the end of said  
10 smoking article is in said predetermined position.

20 An ignition system as claimed in any preceding claim, wherein said sensor is adapted for identifying the position of said end of the smoking article amongst a range of possible positions.

15

21 An ignition system as claimed in any preceding claim, wherein the arrangement is such that said end of the smoking article can be selectively shielded from said heat source, such as to prevent substantial transfer of heat from said heat source to said end.

20

22 A kit of components for forming an ignition system as claimed in any preceding claim.

23 A smoking machine comprising holding means for holding a smoking  
25 article such as to expose one end thereof, puffing means positioned adjacent the other end of the smoking article for drawing air through the smoking article, and an ignition system in accordance with any of claims 1-21 for igniting said one end of the smoking article such that the article can be smoked by the smoking machine.

24 A smoking machine as claimed in claim 23, which machine is capable of holding a plurality of smoking articles, and said lighting system is adapted for igniting each of said smoking articles consecutively.

5 25 A smoking machine as claimed in claim 23 or claim 24, which machine is adapted for moving each smoking article which is to be ignited to a position such that the end of the smoking article is within a small distance, such as to within a few centimetres or a few millimetres, of said ignition head, prior to detection of said end by the sensor and consequent  
10 adjustment of the ignition head and/or the position of the smoking article.